UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,515	01/26/2004	James A. Smith	KLA1P095/P1072	1036

22434 7590 03/18/2005

BEYER WEAVER & THOMAS LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

EXAMINER	
SHECHTMAN, SEAN P	

ART UNIT	PAPER NUMBER
2125	

DATE MAILED: 03/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/765,515	SMITH ET AL.	
	Examiner	Art Unit	
	Sean P. Shechtman	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-8,11-15 and 17-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-8,11-15 and 17-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-4, 6-8, 11-15, and 17-19 are presented for examination. Claims 1, 11, 13, and 17 have been amended. Claims 5, 9-10, and 16 have been cancelled.

Claim Objections

2. Objections withdrawn due to the amendment.

Claim Rejections - 35 USC § 112

3. Rejections withdrawn due to the amendment.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-4, 6-8, 11-15, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,130,967 to Lee in view of U.S. Pat. No. 5,699,447 to Alumot.

Referring to claims 1 and 13, Lee teaches a computer-implemented method and system for detecting features on a semiconductor wafer (Col. 1, lines 13-24) comprising:

a wafer having a plurality of device areas (Col. 1, lines 13-24);

collecting data with a plurality of detectors that are positioned about the semiconductor wafer, wherein the detectors collect data frames for a device area (Col. 2, lines 4-5; Col. 3, lines 24-54);

transmitting the data frames from each detector to a data distribution node (), which is part of a set of data distribution nodes (Fig. 3B2, elements 162, 170, 172, 173, 174) that are interconnected with crossbar connections that enable data collected by the detectors to be

transferred to any of the data distribution nodes (Fig. 3B2, element 168, "crossbar interconnections"; Col. 4, lines 33-58);

a plurality of data transfer paths connecting each of the distribution nodes, wherein each data transfer path transfers data frames collected by a respective detector (See data transfer paths of Fig. 3B2);

a processing node configured to receive data frames from the data distribution system, the processing node configured to analyze the data frames, wherein the data transfer paths allow data frames collected by a detector to be routed to a processing node (Col. 2, lines 1-11; Fig. 3B2, elements 170, 172, 173, 174; Col. 4, lines 33-58; Fig. 3A, element 168);

The examiner respectfully submits that a conventional imaging means such as a CCD camera or SEM that collects data with 32 channels for detection input is plural detectors. The examiner respectfully submits that the respective detector is not required to be respective to any element in the claim.

Referring to claim 2, Lee teaches a 32 detector input channels.

Referring to claims 3 and 14, Lee teaches the above further comprising: buffering data frames within data distributor buffers within each data distribution node (Col. 4, lines 43-46).

Referring to claims 1, 4, 15, and 13, Lee teaches all of the limitations set forth above and Lee teaches the detectors collects data frames for a device area, however Lee fails to teach detectors collect a data frame for each of a plurality of device areas. The examiner respectfully submits that duplicating a part for a multiple effect is a clearly a modification considered to be

well within the level of ordinary skill in the art - In re Harza, 274 F.2d 669,671,124 USPQ 378, 380 (CCPA 1960).

However, referring to claims 1, 4, 13, and 15, Alumot teaches analogous art, wherein detectors collect a data frame for each of a plurality of three or more device areas (Fig. 9; Col. 8, lines 35-67; Col. 31, lines 38-42).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine Alumot with the teachings of Lee.

One of ordinary skill in the art would have been motivated to combine these references because Alumot teaches an inspection system that is capable of inspecting all the critical layers of a wafer and which supplies data on defects caused by the presence of particles and defects in the patterns on the wafer (Col. 1, lines 66 – Col. 2, line 3).

Referring to claims 1 and 13, Lee teaches all of the limitations set forth above however, Lee fails to teach that the processing of data frames includes a row based analysis that involves, generating a plurality of first composite images, each of the first composite images being made up of a row of data frames collected by one of the detectors, wherein each data frame in the row corresponds to a respective device area; and comparing data frames with the first composite images in order to obtain defect information.

Referring to claims 6-8, 11-12, and 17-19, Lee teaches all of the limitations set forth above however, Lee fails to teach the processing of data further comprises a composite-column based analysis that involves, generating a second composite image for each device area by combining the data frames collected by each detector corresponding to a specific device area;

and comparing each of the second composite images in order to obtain defect information (); wherein the processing of data further comprises a row based analysis involving, for each detector, comparing the data frames collected for each of the plurality of device areas, wherein there are four or more device areas

However, referring to claims 1 and 13, Alumot teaches analogous art wherein processing of data frames includes a row based analysis that involves, generating a plurality of first composite images, each of the first composite images being made up of a row of data frames collected by one of the detectors (Col. 13, lines 35; Col. 13, lines 33-36; Col. 17, line 22 – Col. 18, line 13), wherein each data frame in the row corresponds to a respective device area; and comparing data frames with the first composite images in order to obtain defect information (Col. 31, lines 2-13; Col. 10, lines 47-54).

Referring to claims 6-8, 11-12, and 17-19, Alumot teaches analogous art, wherein the processing of data further comprises a composite-column based analysis that involves, generating a second composite image for each device area by combining the data frames collected by each detector corresponding to a specific device area; and comparing each of the second composite images in order to obtain defect information; wherein the processing of data further comprises a row based analysis involving, for each detector, comparing the data frames collected for each of the plurality of device areas, wherein there are four or more device areas (Col. 15, line 3 – Col. 17, line 31).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine Alumot with the teachings of Lee.

One of ordinary skill in the art would have been motivated to combine these references because Alumot teaches automatically inspecting patterned wafers characterized by a relatively high speed and relatively low rate of false alarms such that the patterned wafers may be tested while the wafers are in the production line to quickly enable fabrication personnel to identify any process or equipment causing yield reduction, to receive fast feedback information after corrective actions, and to predict potential yield loss (Col. 1, lines 56-65).

Response to Arguments

5. Applicant's arguments with respect to claims 1-4, 6-8, 11-15, and 17-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art or art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents or publications are cited to further show the state of the art with respect to a crossbar connection to enable data transfer.

U.S. Pat. No. 4,644,461 to Jennings.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571) 272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SPS

Sean P. Shechtman

March 16, 2005

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100